NON-BLOCKING, MULTI-CONTEXT PIPELINED PROCESSOR

5   ABSTRACT OF THE DISCLOSURE

         A packet processor whose processing capabilities are
optimized by concurrently processing multiple packets within
various pipelined stages. At each stage, multiple packets are
processed via an internally pipelined sub-processor. In one
10   embodiment, the packets are processed in a round robin fashion.
When a particular packet is done processing at a particular
stage, it may pass another packet whose processing is not
complete, and move to a next stage. In another embodiment, a
packet is processed until a conditional branch instruction or
15   any other instruction causing a potential stall is encountered.
If such an instruction is encountered, a next available packet
is selected and processed instead of wasting processing cycles
during the stall, or proceeding with the processing of the
20   current packet based on a predicted result. The sub-processor
resumes processing of the packet once the stall is over.

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